

Appn. No. 10057547
Amdt. Dated Nov. 17, 2003
Reply to Office Action of May 13, 2003

Remarks/Arguments:

Reconsideration of this application in light of the above amendments is courteously solicited.

Initially the undersigned would like to thank Examiner Zimmerman for the courtesies extended during a telephonic interview held with the undersigned on July 29, 2003.

Independent claims 1 and 18 have been amended by incorporating therein the subject matter of cancelled dependent claim 17. In addition, Applicant has added new product by process claims 21 and 22 for the Examiner's consideration.

The Examiner rejected previously submitted claims 11-13 and 16-20 under 35 USC 102(b) as being anticipated by Valdo. Applicant respectfully traverses the Examiner's rejection.

The Valdo reference teaches a foam produced from a melt. The foam produced from a melt is totally different from a foam produced by powder.

Foams produced by melting metal are physically different from the foams produced in the powder metallurgic way especially insofar, as powder metallurgically produced foams are not closed cell foams and do have a lower density than foams produced from the melt - i.e. they are lighter. They have different impact resistance and are less resistant to shear and tearing stresses. Generally foams produced from melt are more brittle and less elastic, whereas foams produced from the melt are more ductile. It should also be mentioned that by powder metallurgical processed completely different alloys can be processed such as alloys that would disintegrate when melting. So the products produced by powder metallurgic processes do differ considerably from products made by the melt procedure. Further properties and drawbacks of foams produced by the powder metallurgic process are discussed inter alia in HP 804 982, col 2. The following properties of both foam types should be mentioned:

relative density:

powder-metallurgical Al-SiC foam: 2 - 20 % (This material cannot be melted)
Al-foam produced from the melt: 10 - 35 %

structure:

powder-metallurgical Al-SiC foam: partially open cell
Al-foam produced from the melt: closed cells

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absolute density (g/cm³):

powder-metallurgical Al-SiC foam: 0.1 - 0.25
Al-foam produced from the melt: 0.3 - 1.0

modulus of elasticity (GPa)

powder-metallurgical Al-SiC foam: 0.4 - 1.0
Al-foam produced from the melt: 1.7 - 12

Scher-Modulus (GPa)

powder-metallurgical Al-SiC foam: 0.3 - 0.35
Al-foam produced from the melt: 0.6 - 5.2

Poisson-Number

powder-metallurgical Al-SiC foam: 0.31-0.34
Al-foam produced from the melt: 0.31-0.34

compressive strength (Mpa)

powder-metallurgical Al-SiC foam: 1.3-1.7
Al-foam produced from the melt: 1.9-14.0

yield stress (Mpa)

powder-metallurgical Al-SiC foam: 1.6-1.8
Al-foam produced from the melt: 2.0-20.0

tensile strength (Mpa)

powder-metallurgical Al-SiC foam: 0.05-1.9
Al-foam produced from the melt: 2.2-30.0

fracture toughness

powder-metallurgical Al-SiC foam: 0.1-0.9
Al-foam produced from the melt: 0.3-1.6

thermal conductivity

powder-metallurgical Al-SiC foam: 3.5-4.5
Al-foam produced from the melt: 3.0-35.0

thermal expansion coefficient

powder-metallurgical Al-SiC foam: 21-23
Al-foam produced from the melt: 19-23

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As can be seen from the foregoing, the product of the present invention wherein the mold shaped foamed metal body is from metal powder has significant structural differences from that product produced from a melt as taught by the Valdo reference. Thus, the final product as claimed in independent claims 11 and 18 would have physical properties quite different from those obtained by Valdo due to the fact that the molded shape article comprises a mold shaped foam metal body from powder metal. Accordingly, it is submitted that the claims as pending clearly define over the Valdo reference.

The Examiner further rejected claims 11 and 17-20 as being anticipated over U.S. Patent 3,941,182. Again, as was the case with the Valdo reference described above, the '182 patent deals with producing a foamed metal from a metal melt. Accordingly, the claims as amended distinguish over the '182 reference for the same reasons set forth above with respect to Valdo.

Applicant wishes to comment on EP 804982. This reference teaches the production of foamed parts by powder metallurgy. However, product produced in accordance with EP 804982 does not meet the limitations of the claims as currently pending. The '982 document does not teach embedded materials in the foam nor how this can be accomplished. It is essential in the '982 document that no obstacles, such as structural parts, be present in the mold as a pre-foamed body is pressed into a mold when foaming. Thus, no inclusion of any object or structural part is possible. This would reinforce the suggestion that reinforcement parts are only obtainable in a foamed body wherein the foam is made from a melt.

In light of the foregoing, it is submitted that all of the claims as pending patentably define over the art of record and an early indication of same is respectfully requested.

An earnest and thorough attempt has been made by the undersigned to resolve the outstanding issues in this case and place same in condition for allowance. If the Examiner has any questions or feels that a telephone or personal interview would be helpful in resolving any outstanding issues which remain in this application after consideration of this amendment, the Examiner is courteously invited to telephone the undersigned and the same would be gratefully appreciated.

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If any additional fees are required in connection with this case, it is respectfully requested that they be charged to Deposit Account No. 02-0184.

Respectfully submitted,

Eric Wolfsgruber et al.

By

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Date: November 17, 2003

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: "Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313" on November 17, 2003.


Lori Larson

Docket No. 02-121

Wolfsgruber et al.

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The date stamp of the Patent & Trademark Office
hereon confirms the date the following was received.

☐ New Application☐ Filing Date☐ Assignment☐ Drawing☐ Notice of Appeal☐ Appeal Brief☐ Power of Att.☒ Fee (extension)☒ Resp. to O.A. dated 5/3/03☐ Con. Doc.☒ Check No. 26610

No. 0012 Patent receipt dated 9-02

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